

STATE OF MISSOURI

PERMIT BOOK



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **07 2008 - 006** Project Number: 2007-11-018

Parent Company: Unimin Corporation

Parent Company Address: 258 Elm Street, New Canaan, CT 06840

Installation Name: Unimin Corporation-Pevely Plant

Installation Address: 2968 Highway Z, Pevely, MO 63070

Location Information: Jefferson County, S21, T41N, R5E

Application for Authority to Construct was made for:

Unimin Corporation has requested that their permit be re-evaluated so that their daily emission limit may be increased. This review was conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

☐ Standard Conditions (on reverse) are applicable to this permit.

☒ Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

JUL 16 2008

EFFECTIVE DATE

A handwritten signature in black ink, appearing to read "James K. Kavanagh".  
DIRECTOR OR DESIGNEE  
DEPARTMENT OF NATURAL RESOURCES

#### STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

**You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review.** In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the departments' Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available not more than 60 days but at least 30 days in advance of this date. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number:

Project Number: 2007-11-018

Parent Company: Unimin Corporation

Parent Company Address: 258 Elm Street, New Canaan, CT 06840

Installation Name: Unimin Corporation-Pevely Plant

Installation Address: 2968 Highway Z, Pevely, MO 63070

Location Information: Jefferson County, S21, T41N, R5E

Application for Authority to Construct was made for:

Unimin Corporation has requested that their permit be re-evaluated so that their daily emission limit may be increased. This review was conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

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EFFECTIVE DATE

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DIRECTOR OR DESIGNEE  
DEPARTMENT OF NATURAL RESOURCES

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Permit No.	
Project No.	2007-11-018

## SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

*The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."*

Unimin Corporation-Pevely Plant  
Jefferson County, S21, T41N, R5E

1. **Superseding Condition**  
The conditions of this permit supersede special conditions 2 and 5 found in the previously issued construction permit (Permit Number 012003-003) from the Air Pollution Control Program.
2. **Emission Limitation**
  - A. Unimin Corporation-Pevely Plant shall emit less than 15 tons of particulate matter less than ten (10) microns in diameter (PM<sub>10</sub>) in any consecutive 12 month period from the entire installation.
  - B. Unimin Corporation-Pevely Plant shall maintain an accurate record of PM<sub>10</sub> emitted into the atmosphere from the entire installation. Attachment A or an equivalent form shall be used for this purpose. Unimin Corporation-Pevely Plant shall maintain all records required by this permit for not less than five (5) years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.
  - C. Unimin Corporation-Pevely Plant shall report to the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than ten (10) days after the end of the month during which the records from Special Condition Number 2.B indicate that the source exceeds the limitation of Special Condition Number 2.A
3. **Haul Road Control Requirement-Best Management Practices**  
Unimin Corporation-Pevely Plant shall control dust from all haul roads at this through one of the following three methods:
  - A. **Pavement of Road Surfaces**
    - i. Unimin Corporation-Pevely Plant shall pave the haul roads with materials such as asphalt, concrete, or other materials after receiving approval from the program. The pavement will be applied in accordance with industry standards for such pavement.
    - ii. Maintenance and repair of the road surface will be conducted as necessary to ensure that the physical integrity of the pavement is

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Project No.	2007-11-018

## SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- adequate to achieve control of dust.
  - iii. Unimin Corporation-Pevely Plant shall periodically water, wash or otherwise clean all of the paved portions of the haul roads as necessary to control dust from these areas.
- B. Chemical Dust Suppressants
  - i. Unimin Corporation-Pevely Plant shall apply a chemical dust suppressant (such as magnesium chloride, calcium chloride, lignosulfonates, etc.) to all the unpaved portions of the haul roads.
  - ii. The suppressant will be applied in accordance with the manufacturer's suggested application rate (if available) and re-applied as necessary to achieve control of fugitive emissions from these areas while the plant is operating. If the manufacturer's suggested application rate is not available, Unimin Corporation-Pevely Plant shall request approval of their application rate from the Air Pollution Control Program.
  - iii. The quantities of the chemical dust suppressant shall be applied, re-applied and maintained sufficient to achieve control dust.
  - iv. Unimin Corporation-Pevely Plant shall record the time, date and the amount of material applied for each application of the chemical dust suppressant agent on the above areas. Unimin Corporation-Pevely Plant shall keep these records with the plant for not less than five (5) years, and Unimin Corporation-Pevely Plant shall make these records available to Department of Natural Resources personnel upon request.
- C. Documented Watering
  - i. Unimin Corporation-Pevely Plant shall consistently and correctly apply water to all unpaved sections of the haul roads. Water will be applied in at an application rate of 100 gallons per day per 1,000 square feet of unpaved or untreated surface area of haul roads. For example, Unimin Corporation-Pevely Plant shall calculate the total square feet of unpaved vehicle activity area requiring control on any particular day, divide that product by 1,000, and multiply the quotient by 100 gallons for that day.
  - ii. Unimin Corporation-Pevely Plant shall maintain a log that documents daily water applications. This log shall include, but is not limited to, date and volumes (e.g., number of tanker applications and/or total gallons used) of water application. The log shall also record rationale for not applying water on days the plant is in operation (e.g., meteorological situations, precipitation events, freezing, etc.)
  - iii. Meteorological precipitation of any kind, (e.g. rainfall, sleet or snow)

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Permit No.	
Project No.	2007-11-018

#### SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- greater than a quarter inch or more may substitute for water application.
- iv. Watering shall also be suspended when the ground is frozen, during periods of freezing conditions when watering would be inadvisable for traffic safety reasons, or when there will be no traffic on the roads. Unimin Corporation-Pevely Plant shall record a brief description of such events in the same log as the documented watering.
- v. Unimin Corporation-Pevely Plant shall record the date and the amount of water applied for each application on the above areas. Unimin Corporation-Pevely Plant shall keep these records with the plant for not less than five (5) years, and Unimin Corporation-Pevely Plant shall make these records available to Department of Natural Resources personnel upon request.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE  
SECTION (6) REVIEW

Project Number: 2007-11-018  
Installation ID Number: 099-0013  
Permit Number:

Unimin Corporation-Pevely Plant  
2968 Highway Z  
Pevely, MO 63070

Complete: November 5, 2007

Parent Company:  
Unimin Corporation  
258 Elm Street  
New Canaan, CT 06840

Jefferson County, S21, T41N, R5E

REVIEW SUMMARY

- Unimin Corporation has requested that their permit be re-evaluated so that their daily emission limit may be increased.
- Hazardous Air Pollutant (HAP) emissions are not expected from the proposed equipment.
- Subpart OOO of the New Source Performance Standards (NSPS) applies to the rock-crushing plant.
- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) or currently promulgated Maximum Achievable Control Technology (MACT) regulations apply to the proposed equipment.
- A wet scrubber is being used to control the particulate matter (PM) emissions from the dryer and sand handling equipment in this permit.
- This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM are above de minimis levels.
- This installation is located in Jefferson County, a nonattainment area for ozone (O<sub>3</sub>) and an attainment area for all other criteria air pollutants.
- This installation is not on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2].



- Ambient air quality modeling was performed to determine the ambient impact of PM<sub>10</sub> from the crushing process.
- Emissions testing is not required for the equipment.
- A Basic Operating Permit application is required for this installation within 30 days of equipment startup.
- Approval of this permit is recommended with special conditions.

## INSTALLATION DESCRIPTION

Unimin Corporation owns and operates a silica sand mining and processing facility in Pevely, Missouri. This installation is a de minimis source of PM<sub>10</sub> emissions under New Source Review.

The process starts with drilling and blasting of the sandstone. The shot material is crushed to reduce the size of the rocks and conveyed to a stockpile where it is fed to a vibrating wet screen. Correctly sized material is pumped through a dewatering cyclone before being conveyed up a stacker and to a stockpile.

From the stockpile, the sand is loaded into a fluid-bed dryer. The dryer burner is set up to burn either natural gas or propane. A wet scrubber controls the emissions from the burner and the dryer. The material is then fed into two scalping screens where all oversized material is removed. Equipment in this circuit is controlled by a second wet scrubber.

The material is then transported to the screen house where it is separated by eight (8) vibrating screens into different size fractions and grades before being put into five (5) product bins. From the product bins, the material may be loaded directly into haul trucks for delivery or transported to the cooler circuit where the temperature is lowered to meet customer specifications. A third wet scrubber controls emissions from the screen house and the loadout spouts. A fourth wet scrubber controls emission from the cooler circuit. The final stage of the process is for the material to be hauled from the loadout area to the bagging building where the product is loaded into bags for shipment.

The following construction permits have been issued to Unimin Corporation-Pevely Plant from the Air Pollution Control Program.

Table 1: Construction Permit History

Permit Number	Description
0691-014	Installation of silica sand processing equipment
1191-004	Addition of two belt conveyors, three bucket elevators, three 100-ton storage bins, and one water cooled stationary sand cooler
0297-008	Modification of existing belt conveyors
012003-003	Add fluid bed dryer

## PROJECT DESCRIPTION

Unimin Corporation-Pevely Plant has requested that the Air Pollution Control Program re-evaluate their permit using the program's Best Management Practices policy and updated emission factors. Unimin Corporation-Pevely Plant has also supplied a sieve analysis that shows no PM<sub>10</sub> is present in their washed product, so no PM<sub>10</sub> emissions were calculated for the sand dryer and the sand handling equipment.

## EMISSIONS/CONTROLS EVALUATION

The emission factors and control efficiencies used in this analysis were obtained from the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, sections 11.19.1 "Sand and Gravel Processing," November 1995, 11.19.2 "Crushed Stone Processing and Pulverized Mineral Processing," August 2004, 13.2.2 "Unpaved Roads," November 2006 and 13.2.4 "Aggregate Handling and Storage Piles," November 2006. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year.) The following table provides an emissions summary for this project.

Table 1: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2007 EIQ)	Potential Emissions of the Application	New Installation Conditioned Potential
PM <sub>10</sub>	15.0	45.83	0.72	26.51	< 15
PM	25.0	N/D	N/D	55.9	N/A
SO <sub>x</sub>	40.0	0.06	N/D	0.06	N/A
NO <sub>x</sub>	40.0	22.14	2.52	10.56	N/A
VOC	40.0	0.59	0.10	0.58	N/A
CO	100.0	9.01	0.63	8.87	N/A
HAPs	10.0/25.0	N/A	N/A	N/A	N/A

N/A = Not Applicable; N/D = Not Determined

Unimin Corporation-Pevely Plant has accepted a *de minimis* limit for PM<sub>10</sub> to avoid the air quality modeling requirements of Section (6).

## PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM are above de minimis levels.

## APPLICABLE REQUIREMENTS

Unimin Corporation-Pevely Plant shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

### GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110  
The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required June 1 for the previous year's emissions.
- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-3.090

### SPECIFIC REQUIREMENTS

- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Nonmetallic Mineral Processing Plants*, 40 CFR Part 60, Subpart OOO

## AMBIENT AIR QUALITY IMPACT ANALYSIS

Ambient air quality modeling was performed to determine the ambient impact of PM<sub>10</sub>. The Air Pollution Control Program's quarry nomograph software was used to calculate the 24-hour average concentration of PM<sub>10</sub> at or beyond the installations property boundary. Emissions from haul roads and storage piles were not modeled, but they were addressed as a background concentration of 20 µg/m<sup>3</sup> in accordance with the program's Best Management Practices policy. The modeled impact is less than the National Ambient Air Quality Standards (NAAQS) for PM<sub>10</sub>.

Pollutant	Modeled Impact	NAAQS	Time Period
PM <sub>10</sub>	67.09	150	24-hour

## STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

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Michael Mittermeyer  
Environmental Engineer

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Date

## PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated 10/24/2007, received 11/05/2007, designating Unimin Corporation as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Technology Labs, Ltd. "Particle Size Analysis of Three Silica Sand Samples"
- Air Pollution Control Program Quarry Nomograph

## Attachment A – PM<sub>10</sub> Compliance Worksheet

Unimin Corporation-Pevely Plant  
Jefferson County, S21, T41N, R5E  
Project Number: 2007-11-018  
Installation ID Number: 099-0013  
Permit Number: \_\_\_\_\_

This sheet covers the period from \_\_\_\_\_ to \_\_\_\_\_.  
(month, year) (month, year)

[illegible]

<sup>1</sup>Multiply the monthly stone crushed (tons) by the PM<sub>10</sub> emission factor (lb/ton).

<sup>2</sup>Divide the PM<sub>10</sub> emissions (lbs) by 2000.

<sup>3</sup>Add the current month's PM<sub>10</sub> emissions to the sum of the previous eleven months' PM<sub>10</sub> emissions. 12-month average PM10 emissions **less than 15 tons** are necessary for compliance.

Mr. Daniel Rowe  
Plant Manager  
Unimin Corporation-Pevely Plant  
2968 Highway Z  
Pevely, MO 63070

RE: New Source Review Permit - Project Number: 2007-11-018

Dear Mr. Rowe:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files.

Operation in accordance with these conditions, your new source review permit application and with your amended operating permit is necessary for continued compliance.

The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact Michael Mittermeyer, at the departments' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale  
New Source Review Unit Chief

KBH:mmml

Enclosures

c: Southeast Regional Office  
PAMS File: 2007-11-018

Permit Number: